



NOAA's National Ocean Service

ROUNDTABLES

MONITORING *and* RESPONSE *in* SUPPORT of OCEAN HEALTH

The health of the oceans affects everyone. NOAA's National Ocean Service (NOS) monitors the coastal environment on a variety of scales and responds to spills of hazardous substances in its efforts to preserve healthy ecosystems.

Ocean Observation Systems

Ocean observation systems provide decision makers with information and tools to better understand, predict, and manage the marine environment and the impacts of natural and human-induced change. The development of advanced observation systems, including real time and modeling capabilities, is already dramatically enhancing the quality and quantity of data and services. Technological advances will continue to support improved services such as finer resolution, increased accuracy and timeliness, longer lead times for decision making and more user-friendly products. Observing systems and models can support national, regional, and local capabilities to measure, understand, analyze, and forecast ecological conditions and changes in coastal and ocean systems. Efforts to implement an Integrated Ocean Observing System are being led by the Ocean.US, an office established under the auspices of the interagency National Ocean Research Leadership Council. On a global level, the Administration sponsored an Earth Observing Summit, which resulted in the establishment of the international Group on Earth Observations.

Monitoring

Coastal monitoring is the periodic collection of physical, chemical, biological, or meteorological data to help determine the status of, and changes in, the environmental conditions of coastal waters and estuaries. NOS supports 28 monitoring and observation programs, ranging from hydrographic surveys to the monitoring of contaminants in bivalve mollusks.

Large-scale observations involve simultaneous monitoring of environmental features over large geographic areas. For example, the Benthic Habitat Assessment Mapping project maps bottom habitat throughout U.S. coastal regions with a variety of satellites, sensors, imaging methods and analyses. It is used to establish baseline habitat distributions and to assess changes over time. The Coral Reef Mapping project is important for fisheries, tourism and management of these sensitive areas. Environmental Sensitivity Index Maps, which cover most of the U.S. coastline, contain information on shoreline geomorphology and are used to evaluate coastal erosion, storm vulnerability and coastal changes.

Programs such as the National Estuarine Research Reserve System (NERRS), National Marine Sanctuaries Program (NMSP), National Status and Trends (NS&T), and the Physical Oceanographic Real-Time (PORTS) Observation System generate intensive and frequent measurements of environmental conditions at a few sampling locations.

Some monitoring programs are conducted at the local level. As part of the Everglades Restoration Initiative, NOS is quantifying and modeling existing conditions and ecological relationships along the South Florida coast. The Hypoxia, Hydrographic and Biological surveys are conducted to illuminate factors controlling oxygen depletion (hypoxia) and its effect on fisheries in the Gulf of Mexico. NOS research on harmful algal blooms



N O S

W o r k i n g f o r A m e r i c a ' s C o a s t s

(HABs) is helping to forecast bloom development, persistence, movement and toxicity. Project descriptions, data, and contacts for all of these activities are available at: <http://www.nos.noaa.gov/topics/coasts/monitoring/welcome.html>.

The data collected by one part of NOS often proves useful in other parts of the agency. For example, the National Marine Sanctuaries Program and NERRS use data from the NS&T Program to gauge the type and degree of contamination in these managed areas. Data from the National Water Level Observation Network is used to determine coastal marine boundaries for the production of nautical charts. Coral reef mapping relies on hydrographic-survey data. Data from these long-term programs are key in evaluating environmental conditions and noting progress toward management goals.

Coastal Waste Site Cleanup and Assessment

A hazardous substance release can devastate coastal and marine species and their habitats. At hazardous waste sites where NOAA trust resources are affected, NOS scientists develop cleanup and restoration strategies and assess damages. NOS works with government agencies, industries and the public to (1) provide technical advice on ecological risk, contaminated sediments, Brownfields and remedial issues; (2) determine injuries to coastal resources and recreational loss from releases of hazardous materials; (3) determine the extent to which restoration is required for each injury; (4) conduct natural resource damage assessments and develop cooperative settlements to resolve natural resource damage liability; and (5) work with co-trustees, responsible parties and communities to implement resource restoration. NOS also develops integrated watershed database and mapping tools to support and improve decision-making in risk assessment and identification, and for the protection and restoration of coastal habitats and communities.

Oil and Chemical Spills

NOS provides scientific expertise in response to oil and chemical spills and other hazards that threaten coastal communities and habitats, thereby reducing harm to people, the economy, and the environment. NOS serves as the scientific consultant to the Federal On-Scene Coordinator of such incidents. NOS oceanographers, modelers, biologists, chemists, geologists and field staff also work with national and local response agencies on drills, exercises and contingency planning. NOS is working on such topics as dispersant use, alternate response technologies, and response countermeasures to mitigate spill prevention, increase preparedness, and promote restoration of coastal resources. NOS also conducts damage assessments for incidents that affect NOAA trust resources.

While oil and chemical spills are its major focus, NOS also provides support for downed aircraft, search-and-rescue operations, and forensic oceanography. NOS also invests in science and technology to improve the effectiveness of response and restoration actions.

Discussion Questions

- *What additional types of monitoring or observations would be useful? How can such data be made more accessible?*
- *How can NOS better support the response of states and communities to harmful algal blooms?*
- *Are coastal managers aware of NOS work on coastal waste sites? What benefits can NOS bring to these sites in addition to the work it is already doing?*
- *How can NOS better assist states and localities in response to spills of oil or other hazardous materials (e.g., training, planning)?*